



## BIM Project Execution Planning Procedure

### CALL FOR CASE STUDY PROJECTS

*The Penn State Computer Integrated Construction Research Group is leading a buildingSMART Alliance Project to create a BIM Project Execution Planning Procedure. An initial version of the procedure has been develop and we are currently seeking projects that are interested in testing the procedure through a facilitated BIM Project Execution Planning process. The case study project team will benefit by gaining insight into the BIM Project Execution Planning Procedure and through the development of a Project Execution Plan for their project. The Penn State research team will facilitate the meetings and work with the team to create the project execution plan.*

#### The BIM Project Execution Planning Procedure

The BIM Project Execution Planning Procedure is a four step method for creating a BIM Project Execution Plan.

1. Define the BIM Goals and Uses for the project;
2. Design the BIM execution process through process mapping;
3. Define the BIM deliverables; and
4. Develop the detailed plan to support the execution process.

#### The Case Study Process

We are seeking case study projects that are interested in leveraging the use of BIM throughout multiple areas of project implementation. The Penn State team will help facilitate two or three meetings with the case study project team, depending on the current planning status of the project, to develop a strategy for BIM Project Execution (see Figure 1 for approximate meeting timing). Key project team members will need to participate in the meetings for planning the details regarding the exchange of information between tasks. At the end of the process, the project team will receive a BIM planning guide for effective implementation on the project.

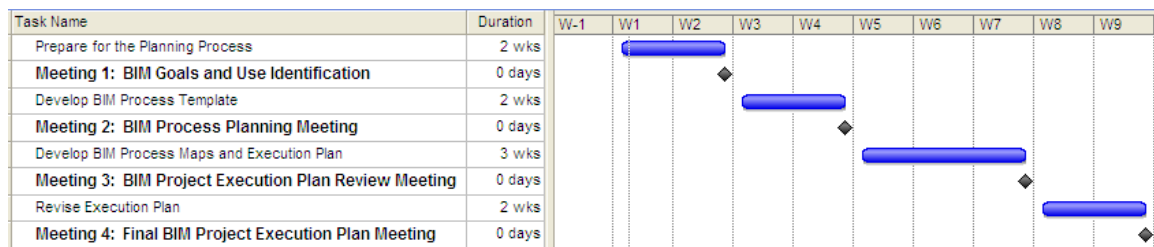


Figure 1: The case study meeting schedule

### How to Submit

To submit your project for consideration, please send us the following details:

1. Project title and description;
2. Description of the current status of the BIM execution planning;
3. List of project participants who would participate in the planning process; and
4. Intended uses of BIM for the project (e.g., architecture, estimating, 4D modeling, record model, etc.)

The Penn State team will assist the project throughout the planning process at no cost to the project team. To benefit the buildingSMART Alliance project, the team will need to provide permission to use the case study results and findings for assessment and future publication.

To submit projects or for additional information, please send an email John Messner at [jmessner@engr.psu.edu](mailto:jmessner@engr.psu.edu) or call at (814) 865-4578.

Thank you for considering this opportunity.

John I. Messner, Ph.D.  
Associate Professor of Architectural Engineering

## Attachment 1: BIM Use Identification

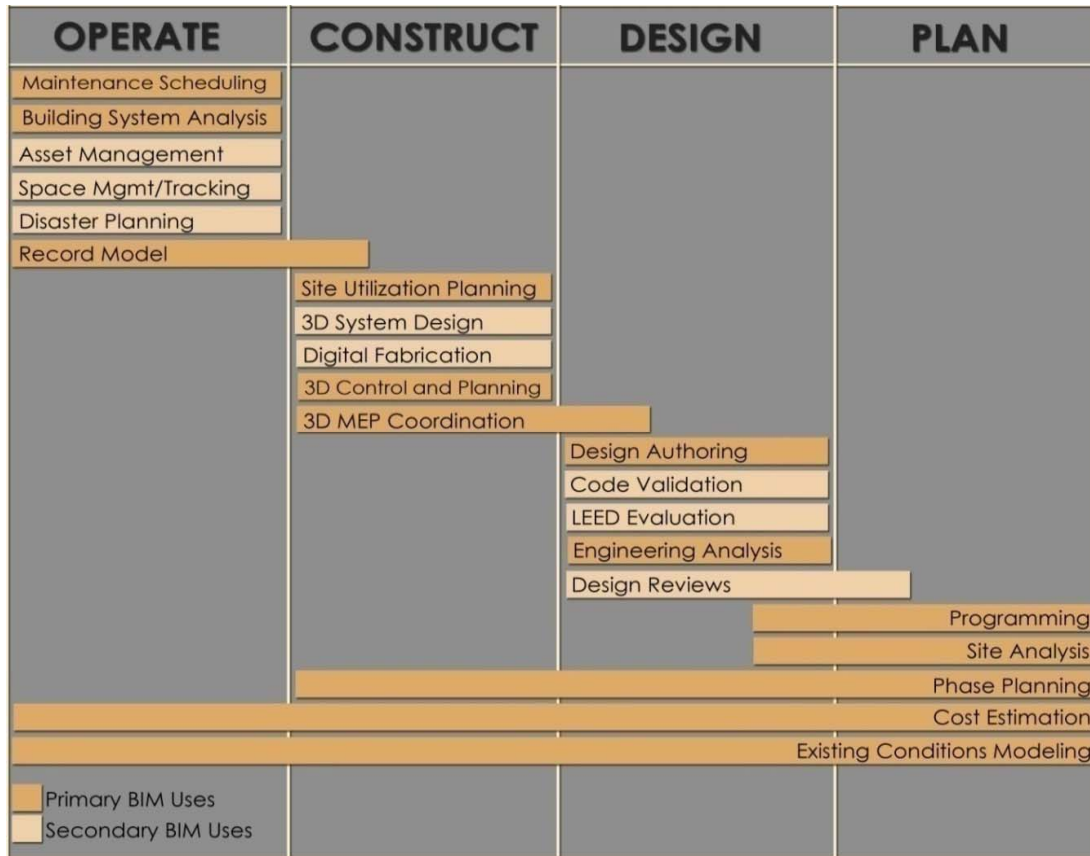


Figure 3: BIM Uses identified throughout a building lifecycle

BIM Uses per Phase	Desire to Implement (Y/N/ Maybe)	Responsible Parties			Project Map Available?	Comments
		Lead Team Member	Add'l Team Members	Experience Level (1-5)		
<b>Operations Phase</b>						
Record Model						
Building System Analysis						
Building Maintenance Scheduling						
Cost Estimation						
Existing Conditions Modeling						

Figure 4: BIM Use worksheet (sample)

## Attachment 2: Example Process Map

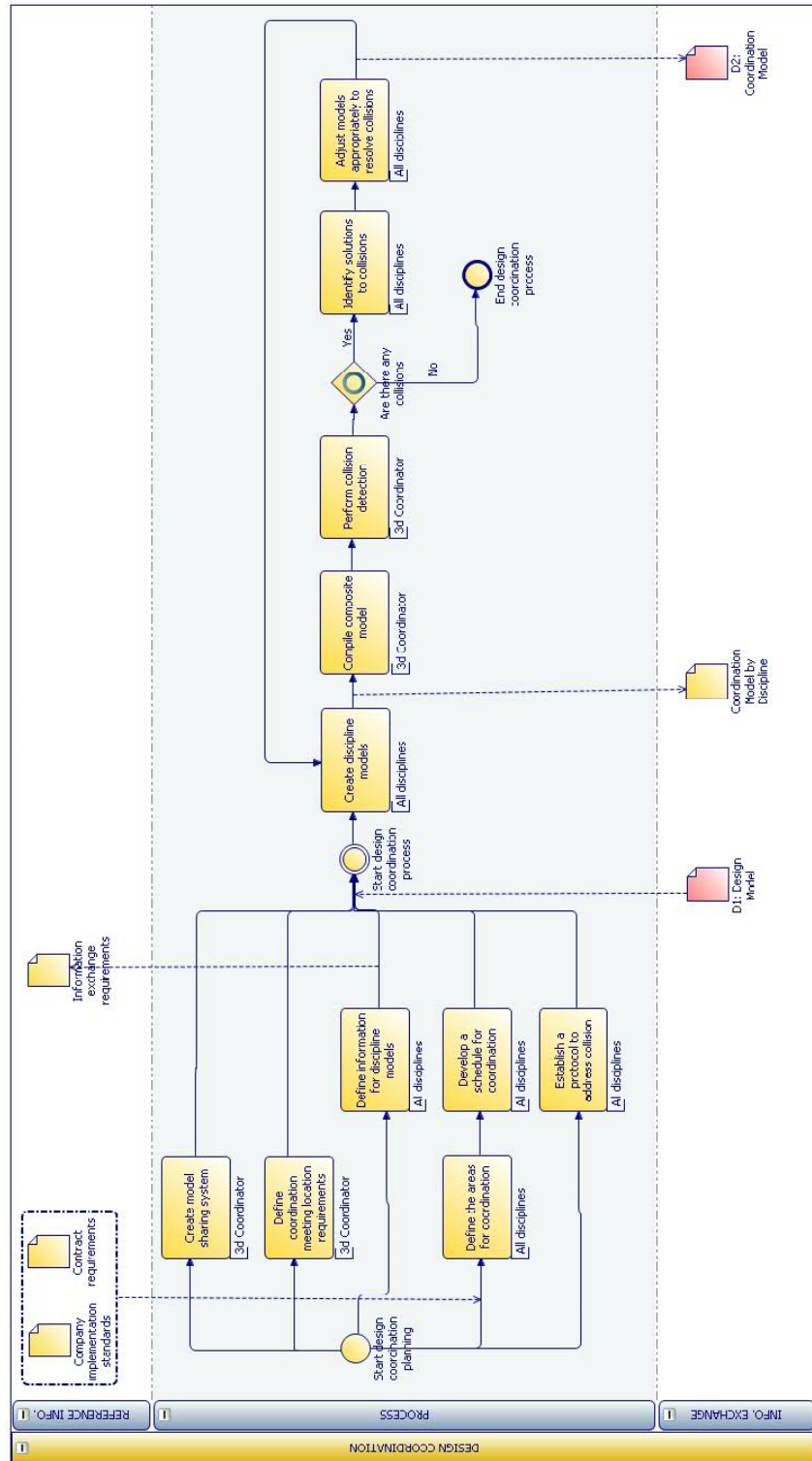


Figure 5: Template Process Map for Design Coordination

## Attachment 3: Information Exchange Requirements

Information Exchange Requirements Template Map: Design Coordination				D1: Design Model			D2: Coordination Model		
Model Elements Utilizing CSI UniFormat				Information	Grouping	Responsible Party	Information	Grouping	Responsible Party
A Substructure	A10 Foundations	Standard Foundations	A1010	A	Building Level	A/E	B	Element	A/E
			A1020	A	Building Level	A/E	B	Element	TC
			A1030	A	Building Level	A/E	B	Element	A/E
	A20 Basement Construction	Basement	A2010	A	Building Level	A/E	B	Element	A/E
			A2020	A	Building Level	A/E	B	Element	A/E
B Shell	B10 Superstructure	Floor Construction	B1010		Building Level		B	Element	TC
			B1020		Building Level		B	Element	TC
			B1030		Building Level		B	Element	A
	B20 Exterior Enclosure	Exterior Walls	B2010	B,E	Building Level	A	B	Element	A
			B2020	B,E		A	B	Element	A
			B2030	B,E		A	B	Element	A
	B30 Roofing	Roof Coverings	B3010	B,E	Building Level	A/E	B		A/E
			B3020	B,E	Building Level	A/E	B		A/E
		Roof Openings	B3030	B,E	Building Level	A/E	B		A/E
			B3040	B,E	Building Level	A/E	B		A/E
C Interiors	C10 Interior Construction	Partitions	C1010	B,E	Building Level	A		Element	A
			C1020	B,E	Building Level	A		Element	A
			C1030	B,E	Building Level	A/E		Element	C??
	C20 Stairs	Stair Construction	C2010	A,E		A/E		Element	TC
			C2020	E		A	A		A
	C30 Interior Finish	Wall Finishes	C3010	E		A	A		A
			C3020	E		A	A		A
		Floor Finishes	C3030	E		A	A		A
			C3040	E		A	A		A
		Ceiling Finishes	C3050	E		A	A		A
D Services	D10 Conveying	Elevators & Lifts	D1010	B,E	Building Level	A/E	B	Element	
			D1020	B,E	Building Level	A/E	B	Element	
			D1030	B,E	Building Level	A/E	B	Element	
	D20 Plumbing	Plumbing Fixtures	D2010	A,E	Building Level	A/E	B	Element	TC
			D2020	A	Building Level	A/E	B	Element	TC
			D2030	A	Building Level	A/E	B	Element	TC
		Rain Water Drainage	D2040	A,E	Building Level	A/E	B	Element	TC
			D2050	A,E	Building Level	A/E	B	Element	TC
		Other Plumbing Systems	D2060	A,E	Building Level	A/E	B	Element	TC
			D2070	A		A/E	B	Element	TC
	D30 HVAC	Energy Supply	D3010	A		A/E	B	Element	TC
			D3020	A		A/E	B	Element	TC
		Cooling Generating Systems	D3030	A		A/E	B	Element	TC
			D3040	A		A/E	B	Element	TC
		Terminal & Package Units	D3050	A		A/E	B	Element	TC

Figure 6: Information exchange requirements for the Design Coordination BIM Use

### Legend:

#### Information:

- A: Geometry, approximate location
- B: Geometry, precise information
- C: Cost
- D: Schedule
- E: Element property information

#### Responsible Party:

- A: Architect
- E: Engineer
- C: General contractor/Construction manager
- TC: Trade contractors
- O: Owner

## Attachment 4: BIM Execution Plan Development

<b>Project Reference Information</b>	<ul style="list-style-type: none"><li>• Critical project overview information, contractual requirements related to BIM, and key project contacts</li></ul>
<b>Project Goals / BIM Objectives</b>	<ul style="list-style-type: none"><li>• Document the underlying purpose for BIM implementation on the project and why key BIM use decisions were made</li></ul>
<b>BIM Process Design</b>	<ul style="list-style-type: none"><li>• Develop process maps for project activities related to BIM</li><li>• Define information exchanges</li></ul>
<b>Delivery Strategy / Contract</b>	<ul style="list-style-type: none"><li>• Definition of the delivery structure, selection, and contracting</li></ul>
<b>BIM Scope Definitions</b>	<ul style="list-style-type: none"><li>• Include model elements by discipline, level of detail, and specific attributes</li></ul>
<b>Organizational Roles and Responsibilities</b>	<ul style="list-style-type: none"><li>• Define the roles of each organization along with responsibilities</li><li>• Define contracting strategies for organizations</li></ul>
<b>Communication Procedures</b>	<ul style="list-style-type: none"><li>• Electronic communication procedures</li><li>• Meeting communication procedures</li></ul>
<b>Technology Infrastructure Needs</b>	<ul style="list-style-type: none"><li>• Hardware, software, space, and networking requirements</li></ul>
<b>Model Quality Control Procedures</b>	<ul style="list-style-type: none"><li>• Identify the methods to ensure model accuracy and comprehensiveness</li></ul>

Figure 7: BIM Execution Planning Categories